

REMARKS

The Office Action dated January 7, 2003, and the Advisory Action dated May 21, 2003, have been received and carefully noted. Further to Applicant's remarks filed on May 7, 2003, the following remarks are submitted as a full and complete response thereto.

Claims 27-51 are pending in the application. Applicant has amended claims 27, 28, 30-44, and 46-51 to more particularly point out and distinctly claim the present invention. No new matter has been added, and no new issues are raised which require further consideration or search. In view of the following remarks, reconsideration and allowance of these claims are respectfully requested. This response is accompanied by an appropriate Petition for Extension of Time and a Request for Continued Examination under 37 CFR §1.114.

I. CLAIM REJECTIONS UNDER 35 USC § 103

Claims 27-38 and 43-51 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dennison et al. (US 5,546,445) in view of Corriveau et al. (U.S. Patent No. 6,038,449).

The Office Action of January 7, 2003 alleged that Dennison discloses all of the elements of the claimed invention of claims 27-38 and 43-51, with the exception of disclosing a step of deciding on the basis of the result of the processing step, whether a first handover condition based on location information is fulfilled or not, when the first handover condition is not fulfilled, checking subscriber specifications, whether or not

another measurement related to a handover is to be performed, wherein the another measurement results in a determination of a second handover condition. The Office Action also conceded that Dennison fails to disclose a step of designating a next base transceiver station in the communication network, to which the communication with the mobile station is to be directed from a current base transceiver station, when the first handover or the second handover condition is fulfilled. The Office Action relied upon Corriveau to allegedly cure the deficiencies of Dennison.

Applicant submits that the prior art cited in the Office Action fails to teach, suggest or disclose the features of the claimed invention. Therefore, the rejection is respectfully traversed and reconsideration is respectfully requested for the reasons which follow.

Claim 27, upon which claims 28-42 are dependent, recites a method for performing a handover procedure for a mobile station communicating in a communication network and being movable therein. The communication network comprises a plurality of base transceiver stations being adapted to perform a communication with the mobile station within a coverage area of a respective one of the base transceiver stations. The method comprises a processing step, a deciding step, a designating step, a triggering step and a performing step. The processing step processes location information related to the mobile station by comparing position information of the mobile station with position information related to the base transceiver stations. The deciding step decides on the basis of the results of the processing of the location

information, whether a first handover condition based on location information is fulfilled or not. When the first handover condition based on the location information is not fulfilled, the deciding step also checks subscriber specifications to decide whether or not another measurement related to a handover is to be performed, wherein another measurement results in a determination of a second handover condition. The designating step designates a next base transceiver station in the communication network, to which the communication with the mobile station is to be directed from a current base transceiver station, when the first handover or the second handover condition is fulfilled. The triggering step triggers a handover of the communication connection of the mobile station from the current base transceiver to the next base transceiver station designated in the designation step. The performing step performs the handover.

Claim 43, upon which claims 44-51 are dependent, recites a device for controlling a handover procedure for a mobile station communication in a communication network and being movable therein. The communication network comprises a plurality of base stations adapted to perform a communication with the mobile station within a coverage area of a respective one of the base transceiver stations. The device comprises a processing means and a triggering means. The processing means processes location information related to the mobile station by comparing position information of the mobile station with position information related to base transceiver stations and for deciding on the basis of the result of the processing of the location information, whether a first handover condition based on the location information is fulfilled or not, for checking,

when the first handover condition based on the location information is not fulfilled, subscriber specifications, whether or not another measurement related to a handover is to be performed, wherein another measurement results in a determination of a second handover condition, and for designating a next base transceiver station in the communication network, to which the communication with the mobile station is to be directed from a current base transceiver station, when the first handover condition or the second handover condition is fulfilled. The triggering means triggers a handover of the communication connection of the mobile station from the current base transceiver station to the next base transceiver station designated by the designating means.

As a result of the claimed invention, a method and device for performing handovers using location information is provided. The invention employs location information which is, for example, periodically determined to decide whether a handover is to be performed and to which base transceiver station the communication is to be changed. One advantage of the present invention is that the base transceiver stations can be intermittently turned off when their services are not needed. Namely, a base transceiver station may be turned on by a corresponding base station controller only when a mobile station enters the base transceiver station's coverage area. This is a cost saving feature of the invention and it also reduces power consumption. These advantages are not all-inclusive but are merely exemplars of some of the benefits of the invention.

Applicant submits that the prior art fails to disclose or suggest the elements of the invention as set forth in claims 27-38 and 43-51, and thereby fails to provide the critical

and nonobvious advantages that are provided by the invention. To establish a prima facie case of obviousness, the prior art reference (or references when combined) must teach or suggest all of the claimed limitations. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The teaching or suggestion to make the claimed combination must be found in the prior art, and not be based on Applicant's disclosure. See M.P.E.P. §§ 2143.01 and 2143.03.

Dennison discloses a cellular telephone system including a plurality of cell sites and a mobile telephone switching office. Call management, including selection of a cell site most appropriate for a call associated with a mobile unit, are made based on the geographic location of the mobile unit as opposed to the strength of the signal associated with the call.

Corriveau discloses a method and apparatus for inter-exchange hand-off taking into account the service capabilities of a candidate cell. In a cellular telephone network, a message is sent from a first exchange to a second exchange distributing information on the services capabilities supported by a cell serviced by the first exchange. Inter-exchange messaging is provided for distributing from the second exchange to the first exchange information on the service capabilities supported by a cell serviced by the second exchange. Using the distributed service capability information, the first exchange identifies whether to request that cells serviced by the second exchange be instructed to make verification signal strength measurements. Furthermore, responsive to the received

verification signal strength measurement reports the first exchange screens candidate cells based on the distributed service capability information to select an appropriate target cell served by the second exchange for hand-off.

Applicant submits that no motivation exists either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify or combine Dennison in view of Corriveau exist for at least the following reasons. First, one of ordinary skill in the art would not rely upon the teaching of Corriveau to modify Dennison because Dennison specifically states, “Call management, including selection of a cell site most appropriate for a call associated with a mobile unit, are made based on the geographic location of the mobile unit as opposed to the strength signal associated with the call. (Dennison, Abstract, col.5, lines 45-48). However, Corriveau specifically states that the decision to first determine whether a hand-off is necessary is based upon the signal strength. (Corriveau col. 5, lines 3-23). Dennison further provides explicit teachings against the combination suggested by the Office Action. For instance, Dennison further states, “Since call management decisions are made based on position of the mobile unit, the number of cell sites can be reduced as communication is not subjected to vagaries of whether or the like to the degree that call management decisions based on signal strength are.” (Emphasis added. Dennison, col. 4, lines 10-14).

For at least this reason, it would not have been obvious to one skilled in the art at the time of the invention to combine or modify Dennison in view of Corriveau.

Even if the references are combined, (which would not have been obvious for the reasons set forth above), the combination still does not render the present invention obvious. The combination of Dennison in view of Corriveau does not disclose or suggest every limitations of the claimed invention. First, the Office Action admits that Dennison fails to teach or disclose the step of deciding on the basis of the result of the processing step, whether a first handover condition based on location information is fulfilled or not, when the first handover condition is not fulfilled, checking subscriber specifications, whether or not another measurement related to a handover is to be performed, wherein the another measurement results in a determination of a second handover condition. Second, the Office Action also conceded that Dennison fails to disclose a step of designating a next base transceiver station in the communication network, to which the communication with the mobile station is to be directed from a current base transceiver station, when the first handover or the second handover condition is fulfilled.

Third, Corriveau does not cure the deficiencies that the Office Action admits exist within Dennison. Corriveau does not disclose or suggest the step of deciding on the basis of the result of the processing step of processing the location information, whether a first handover condition is fulfilled or not, when the first handover condition is not fulfilled based upon the location information, checking subscriber specifications, whether or not another measurement related to a handover is to be performed, wherein the another measurement results in a determination of a second handover condition. In the claimed invention, the processing step processes location information related to the mobile station

by comparing it with position information related to the base transceiver stations. In contrast, Corriveau discloses that a first decision is made whether a handover is necessary based on the signal strength measurements (see col. 5, lines 14 to 23). If a handover is necessary, then, candidate cells for the handover, which are determined on the basis of signal strength measurements, are sent to the serving mobile switching center (MSC) along with a handover request (col. 5, lines 23 to 35). Based on the stored information, the MSC performs a check on the service capabilities of the candidate cells of the neighboring MSCs to determine whether one of the cells is capable of providing sufficient services to the mobile station (col. 5, lines 36 to 48). If a neighboring MSC having sufficient service capability is detected, a corresponding signaling is transmitted to this neighboring MSC. On the other hand, when it is determined by the first signal strength measurements that no handover is necessary at all, no further action is described.

In other words, according to Corriveau, a first handover decision is made (based on signal strength measurement). If this first handover decision is YES, a second handover decision may be performed (based on stored information). Contrary to the teachings of Dennison and Corriveau, in the present invention and as defined in the claimed invention (see also Fig. 2, steps S4 and S5): A first handover decision is made (for example, based on location information of the mobile station and on position information of the base stations). If this first handover decision is NO, a second handover decision may be performed (for example, based on subscriber specifications for further measurements).

Thus, the claimed invention is patentably distinct over the combination of Dennison and Corriveau, taken alone or in combination, since the cited references fail to disclose or suggest at least the step of “deciding on the basis of the result of said processing of said location information, whether a first handover condition based on the location information is fulfilled or not, when the first handover condition based on said location information is not fulfilled, checking (S5) subscriber specifications, whether or not another measurement related to a handover is to be performed, wherein said another measurement results in a determination of a second handover condition.”

For at least these additional reasons, Applicant respectfully submits that claims 27-38 and 43-51 are patentable over Dennison and Corriveau, taken in combination or alone.

In addition, claims 28-42 depend from claim 27 and claims 44-51 depend from claim 43, and are therefore allowable at least for the reasons claims 27 and 43 are allowable, respectively, and for the specific limitations recited therein.

Claims 39-42 are rejected under 35 U.S.C. §103(a) as being unpatentable over Dennison and Corriveau in view of Menich (WO 93/19560).

The Office Action alleged that Dennison discloses all of the elements of the claimed invention of claims 39- 42, with the exception of teaching that the coverage area of a base station designated in said designating step and to which the communication is to be directed as a coverage area not adjacent to the coverage area of the current base transceiver station.

Applicant submits that the prior art cited in the Office Action fails to teach, suggest or disclose the features of the claimed invention. Therefore, the rejection is respectfully traversed and reconsideration is respectfully requested for the reasons which follow.

Menich discloses a directional handover control in digital mobile radio systems employing Mobile Assisted Handover (MAHO). Menich discloses a method of selecting handover targets for a communication unit exchanging a communicated signal through a serving base site in a digital cellular system. Menich uses timing advance to determine a relative distance of a communication to the serving base site. Menich compares a timing advance value with a first threshold. When the timing advance value exceeds the first threshold, a base site frequency list is modified to include base sites non-adjacent the serving base site. The next handover target may be selected from the modified base site frequency list.

Claim 39-42 depends from claim 27 and are therefore allowable for the reasons claims 27 is allowable and for the specific recitations therein. Furthermore, the claimed invention is patentable over the combination of Dennison, Corriveau and Menich because Menich does not overcome the deficiency regarding the combination of Dennison and Corriveau discussed above. Specifically, Dennison, Corriveau and Menich, taken alone or in combination, fail to disclose or suggest the step of deciding on the basis of the result of the processing of the location information, whether a first handover condition based on location information is fulfilled or not, when the first handover condition based on said

location information is not fulfilled, checking subscriber specifications, whether or not another measurement related to a handover is to be performed, wherein the another measurement results in a determination of a second handover condition.

Thus, Applicant respectfully submits that the claimed invention is patentable over the cited references.

ADVISORY ACTION

The Advisory Action contends, on page 3, “This part of the claim is broad enough that one can say that even though the handover decision is YES in the Corriveau reference, it can read on to say that the first handover condition is not fulfilled since it doesn’t mention any limits or thresholds that must be exceeded. Even if this part of the claim did have enough detail to read what is stated above, the Dennison reference would teach that aspect in Fig. 11B.” Applicant is confused as to the rationale and logic of this argument. Applicant submits that it is unclear as to how Corriveau is being interpreted in the Advisory Action. Corriveau is directed only to a situation where the first condition is fulfilled (and thus the handover decision is YES) (Fig. 3A in connection with col. 5, lines 14-20), wherein the handover decision is based on the signal strength measurement. The Advisory Action even admits that Corriveau discloses that it is directed to situations where the first condition is fulfilled. If Corriveau is directed only to situations where the first condition is fulfilled, however, it is unclear to the Applicant as to how the Advisory Action can strain the interpretation of Corriveau to further allege, “it can be read on to say that the first handover condition is not fulfilled since it doesn’t mention any limits or

thresholds that must be exceeded.” Since there is no motivation within Corriveau or any of the other cited references or in the knowledge generally available to one of ordinary skill in the art, to modify the cited references, Applicant submits that the Advisory Action has made a strained interpretation of Corriveau that could be made only by hindsight. Thus, for this reason and for the reasons discussed above, Applicant respectfully submit that the combination of Dennison, Corriveau and Menich, taken alone or in combination, fails to render obvious the claimed invention.

CONCLUSION

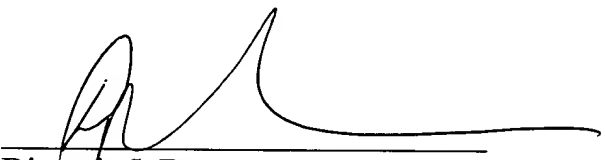
As discussed above, claims 27-51 are pending in the application. Applicant has amended claims 27, 28, 30-44, and 46-51 to more particularly point out and distinctly claim the present invention. No new matter has been added, and no new issues are raised which require further consideration or search. Applicant submits that no motivation exists either in the references themselves or in the knowledge generally available to one of ordinary skilled in the art to modify or combine the teachings of Dennison and Corriveau. Applicant further submits, even if the references are combined, (which would not have been obvious for the reasons set forth above) that Dennison and Corriveau, taken in combination or alone, fails to disclose or suggest several limitations of the claimed invention as discussed above. In addition, the combination of Dennison, Corriveau, and Menich also fails to disclose or suggest each and every limitation of the claimed invention as discussed above. Thus, Applicant submits that certain clear and

important distinctions exist between the cited prior art and the claimed invention. Applicant submits that these distinctions are more than sufficient to render the claims of the invention unanticipated by and unobvious in view of the prior art. Having addressed each of the foregoing rejections or objections, it is respectfully submitted that claims 27-51 in this application are now in condition for allowance. Notice to that effect is respectfully requested.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,


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Enclosures: Petition for Extension of Time